

**PRE-APPEAL BRIEF REQUEST FOR  
REVIEW**

Docket Number 042933/303048

**(filed with the Notice of Appeal)**

Application Number 10/720,658

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First Named Inventor John Terry

Art Unit 2618

Examiner Dean, Raymond S.

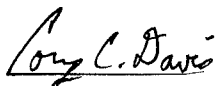
Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

Respectfully submitted,



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Attachment  
Reasons for Requesting Pre-Appeal Brief Request For Review

**I. Claims 1-10, 16-17, and 21-23 are not obvious over Mantravadi in view of Kadous**

Claims 1-10, 16-17 and 21-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mantravadi (U.S. Patent Publ. No. 2005/0068918) in view of Kadous (U.S. Patent No. 6,636,568). Claim 1, requires, *inter alia*, a system having “a first mapper ... mapping the first representations ... into *first mapped values* according to a first mapping scheme” and “a second mapper ... mapping the second representations ... into *second mapped values* according to a second mapping scheme ...” wherein the first mapper *transmits the first mapped values* to a first antenna transducer ... and wherein the second mapper *transmits the second mapped values* to a second antenna transducer ..., the first and second antenna transducers *receive and transduce only* the first mapped values and the second mapped values, respectively ...”

Applicant submits that the combination of Mantravadi and Kadous does not teach or suggest at least the above recitations of claim 1. As pointed out in the Amendments filed August 28, 2006 and February 16, 2007, Mantravadi fails to teach or suggest “wherein the first mapper *transmits the first mapped values* ... the second mapper *transmits the second mapped values* ..., the ... transducers *receive and transduce only* the first ... and ... second mapped values, respectively ...” as required by claim 1. On pg. 4 of the Final Office Action, the Examiner correctly conceded that Mantravadi does not teach or suggest the above recitations of claim 1, but the Examiner continues to rely on Kadous to make up for the deficiencies of Mantravadi. Applicant respectfully disagrees and submits that the Examiner is giving the combination of references credit for more than what they actually teach.

Mantravadi, in contrast to claim 1, relates to “techniques to perform hierarchical coding with multiple antennas in a wireless communication system.” (paragraph [0008]) In the background section, Mantravadi explains that “[w]ith hierarchical transmissions, [i.e., codings] the broadcast data is divided into a ‘base stream’ and an ‘enhancement stream.’” (paragraph [0005]) Mantravadi further discloses that a “conventional method of implementing hierarchical coding is through the use of non-uniform modulation” in which “data for the base stream is modulated with a first modulation scheme and data for the enhancement stream is modulated with a second modulation scheme that is superimposed on the first modulation scheme.” (paragraphs [0006] & [0007]) Mantravadi also describes that hierarchical coding is typically

used for a single-input single-output (SISO) system. In this regard, Mantravadi describes that it is directed to a technique to perform hierarchical coding in a MIMO system. (See *id.*)

As pointed out in the Amendments filed August 28, 2006 and February 16, 2007, in order to achieve the hierarchical coding, by using non-uniform modulation and a modulation scheme that is superimposed on another modulation scheme, in a MIMO system, Mantravadi describes that processor 420a performs spatial processing on data symbols  $\{s_b\}$  for the base data stream  $\{d_b\}$  “and provides two symbol substreams for the two transmit antennas” 324a, 324b.

(paragraph [0011]) Mantravadi also describes that processor 420b performs spatial processing on data symbols  $\{s_e\}$  for the enhancement data stream  $\{d_e\}$  “and provides two symbol substreams for the two transmit antennas” 324a, 324b. (See *id.*) Mantravadi further describes that combiner 440 receives and combines the two symbol substreams for the base stream  $\{s_b\}$  and the enhancement stream  $\{s_e\}$  in order to obtain two transmit symbol streams  $\{x_1\}$  and  $\{x_2\}$  that are provided to transmitter units 322a, 322b respectively. In contrast to Mantravadi, and claim 1, Kadous relates to techniques for determining “data rates for a number of data streams transmitted via a number of transmission channels in a multi-channel (e.g. MIMO) communication system.” (Abstract; Col. 2, lines 26-32) Kadous describes that transmitted symbol streams may experience different channel conditions and may achieve different signal to noise ratios (SNRs) for a given amount of transmit power. Kadous further describes that if the achieved SNR of each symbol stream is known at the transmitter, then the data rate, coding and modulation scheme for the corresponding data stream may be selected to maximize spectral efficiency. However, Kadous explains that for some MIMO systems, channel state information indicative of the current channel conditions is not available to the transmitter. (Col. 9, lines 24-35) In this regard, Kadous, at best, discloses that it is directed to techniques to provide improved performance for a MIMO system when channel state information indicative of current channel conditions is not available at a transmitter. (Col. 9, lines 48-51)

To determine a set of data rates for multiple data streams based on limited channel state information, Kadous discloses a transmitter system 110 in a MIMO system having a data source 112 that is provided to a transmit (TX) data processor 114. The TX data processor formats, codes and interleaves the traffic data. (Col. 3, lines 59-67) The modulation symbols for all data streams are provided to a TX MIMO processor 120, which provides  $N_T$  modulation symbol streams to  $N_T$  transmitters (TMTR) 122a through 122t. (Col. 4, lines 11-22) Kadous further

explains that the  $N_T$  modulated signals are transmitted from transmitters 122a through 122t and are subsequently transmitted from  $N_T$  antennas 124a through 124t and received by a receiver system 150. An RX MIMO/data processor 160 of the receiver system receives and processes the received symbol streams based on a receiver processing technique to provide  $N_T$  detected symbol streams. (Col. 4, lines 24-35) Kadous explains that the RX MIMO/data processor 160 may derive an estimate of the operating SNR for the system which indicates the conditions of the communication link and a controller 170 provides channel state information (CSI) to a TX data processor 178, which sends the CSI back to the transmitter system 110. (Col. 4, lines 45-64) At the transmitter system 110, a RX data processor recovers the CSI and a controller 130 uses the CSI to determine the data rates used for the data streams. (Col. 4, lines 65-67; Col. 5, lines 1-6 & FIG. 1)

In the Amendment filed February 16, 2007, Applicant noted that given that the TX data processor 310 and the TX spatial processor 320 of the MIMO system of Mantravadi are specifically designed in order to achieve hierarchical coding, by using non-uniform modulation and a modulation scheme that is superimposed on another modulation scheme, (For e.g., TX spatial processor 320 provides transmit symbol stream  $\{x_1\}$  to antenna 324a which contains both data symbols for base stream  $\{s_b\}$  and data symbols for enhancement stream  $\{s_e\}$ . Similarly, TX spatial processor 320 provides transmit symbol stream  $\{x_2\}$  to antenna 324b which contains both data symbols for base stream  $\{s_b\}$  and data symbols for enhancement stream  $\{s_e\}$ ) and since the TX data processor 114 and the TX MIMO processor 120 of Kadous are not designed for and do not achieve hierarchical coding, a skilled artisan would not modify the MIMO system of Mantravadi with the MIMO architecture of Kadous, as suggested by the Examiner. As noted above, the TX data processor 310 and the TX spatial processor 320 of the MIMO system of Mantravadi are specifically designed in order to achieve hierarchical coding, by using non-uniform modulation and a modulation scheme that is superimposed on another modulation scheme. However, nowhere in Kadous is there any teaching or suggestion that the TX data processor 114 and the TX MIMO processor 120 of Kadous which provide data stream to transmit antennas 124a through 124t are designed for hierarchical coding. (Col. 15, line 55 to Col. 16, lines 1-67; Col. 17, lines 1-15; FIG. 5 of Kadous) Rather, as can be seen in FIG. 5 of Kadous, the TX MIMO processor 120a of Kadous simply receives a “respective modulated symbol” stream (via inverse Fourier Transform (IFFT) unit 522a) from symbol mapping 516a

and “respective modulated symbol stream” from symbol mapping 516t (via IFFT unit 522t). (Col. 16, lines 53-58) As understood to skilled artisans, the IFFT units 522a, 522t of Kadous do not utilize a data stream of a modulation scheme that is superimposed on another data stream of modulation scheme so as to be capable of performing hierarchal coding and nothing in Kadous suggests otherwise. (See FIG. 5) Rather, each “IFFT unit 522 groups sets” of “modulation symbols to form” modulation symbol vectors and thereby generate OFDM symbols which are provided to a cyclic prefix generator 524 which “then provides a stream of transmission symbols to an associated transmitter 122.” (Col. 16, lines 59-67; Col. 17, lines 5-7)

Neither the cited portion nor any portion of Kadous (or Mantravadi) teaches or suggests that the transmitter system 110 of Kadous is capable of performing hierarchical coding. As such, a skilled artisan would not modify the MIMO systems of Mantravadi and Kadous in the manner suggested by the Examiner because to do so would change the principle of operation of Mantravadi and there is simply no reasonable expectation that the references can be successfully modified in the manner suggested by the Examiner. And as such, the proposed combination violates the mandates set forth in MPEP §§ 2143.01, 2143.02. Elements of the MIMO systems of Mantravadi and Kadous taken in combination are simply incompatible. In the Advisory Action dated March 7, 2007, the Examiner has not addressed the above arguments. To the contrary, the grounds of rejection in the Advisory Action merely contains the sweeping assertion that there is motivation in the Kadaous and Mantravadi references for the proposed modification and posits that “any judgment on obviousness is ... necessarily a reconstruction based on hindsight reasoning,” but does not provide any substantive explanation whatsoever to address Applicant’s arguments provided above. Applicant submits that this practice is contrary to the mandate required by MPEP § 707.07(f) which provides that “[w]here [A]pplicant traverses any rejection, the Examiner should, if he ... repeats the rejection, take note of [A]pplicant’s argument and answer the substance of it.” As such, Applicant’s arguments with respect to claim 1 remain rebutted and claim 1 is patentable at least for those reasons previously of record. For at least the foregoing reasons, the combination is deficient and does not teach or suggest all of the features of claim 1. Applicant therefore respectfully requests reversal of the § 103(a) rejection of claim 1 and its dependent claims 2-10 and 12-15. Since claims 16 and 21 contain features that are analogous to, though not necessarily coextensive with, the features recited in claim 1, Applicant

submits that claims 16 and 21 as well as their respective dependent claims 17-20 and 22-23 are patentable at least for reasons analogous to those submitted for claim 1.

With further regard to claim 5, claim 5 recites independently patentable subject matter given that the combination fails to teach or suggest “elements of the first set of mapped *values differing in value* with elements of the second set of mapped values,” “the first set of mapped values and the second set of mapped values ... respectively, are formed of *mutually-exclusive elements*,” as required by claim 5. In rejecting claim 5, the Examiner continues to suggest that paragraphs [0105] and [0106] of Mantravadi in combination with Kadous teaches the features of claim 5. (Pgs. 6-7 of the Final Office Action 7 & Advisory Action) Applicant again respectfully disagrees. In the Amendment dated February 16, 2007 it was pointed out that nowhere in the cited portion or any other portion of the combination is there any mention, teaching or suggestion relating to a first mapper (alleged modulator 416a) that maps a first set of mapped values and a second mapper (alleged modulator 416b) that maps a second set of mapped values where values of the first set of mapped values and the second set of mapped values *differ and are formed of mutually exclusive elements*, as claimed. The cited portion, and indeed all portions, of the combination are simply altogether silent regarding the makeup and content of any of the values generated from the modulators 416a, 416b and as known to skilled artisans it certainly is not necessarily the case that the modulators 416a, 416b generate values that differ and that are mutually exclusive to each other, as required by claim 5. The Examiner is giving the combination of references credit for more than they actually teach. Contrary to the Examiner’s assertion in the Advisory Action, even assuming *arguendo* that the combination discloses differing mapping schemes, such disclosure does not demonstrate that each element of a first set of mapped values differs in value with elements of a second set of mapped values. Some of the elements (e.g., one element) of the first set of mapped values could have the same value as some (e.g. one element) elements in the second set of mapped values. As known to skilled artisans, “[t]he first and second mapping schemes [must be] ... *selected* to exhibit *differing* properties and ... *are selected* such that the constellation sets of the separate mapping schemes comprise *dissimilar* symbol points.” (pg. 6 of the specification) Based on at least the foregoing, Applicant respectfully requests reversal of the § 103 rejection of claim 5 for this additional reason. Accordingly, for all the reasons discussed above, Applicant respectfully requests that the rejections of claims 1-10 and 12-23 be reversed.